NUMBER 108-12023

PRODUCT SPECIFICATION
CRIMP TYPE STANDARD
TWIN COAXICON* CONTACTS

1.0 SCOPE

1.1 This specification covers the performance requirements and test procedures for Crimp Type, Standard Twin COAXICON Contacts.

2.0 APPLICABLE DOCUMENTS

2.1 The following specifications and standards form a part of this specification to the extent specified herein.

2.1.1 Military Specifications:

Mil-C-17	Coaxial Cable, Radio Frequency
Mil-G-45204	Gold Plating, Electrodeposited

2.1.2 Federal Specifications:

QQ-B-613	Brass Leaded and Non Leaded
QQ-C-530	Beryllium Copper
QQ-C-533	Beryllium Copper
QQ-C-576	Copper
QQ-N-290	Nickel Plating, Electrodeposited
QQ-S-365	Silver Plating, Electrodeposited

2.1.3 Industrial Specification:

General Purpose	Polypropylene

2.1.4 Test Specifications:

Mil-C-45662	Calibration of Standards
Mil-Std-202	Test Methods for Electronic and Electrical Component Parts

3.0 REQUIREMENTS

3.1 Definitions. For the purpose of this specification, the following definitions shall apply.

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(GPS 501-3)

LTR	REVISION RECORD	DR	CHK	DATE
A	per ECN C80-96	MB	RP	9/28/73
Ø	per ECN C73-137	RP	RP	6/4/73

DR R.W. Prescott 8/28/73
CHK T. Flanagan 9/24/73
APP D.L. Smith 9/24/73

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3.1.1 Contact Assembly. Mated Pin and Socket.

3.1.2 Pin. The portion of the contact assembly which houses the male inner contacts.

3.1.3 Socket. The portion of the contact assembly which houses the female inner contacts.

3.1.4 Outer Shell. The shield or braid circuit of the contact.

3.2 Design and Construction. Contacts shall be of the design, construction, and physical dimensions specified on the applicable AMP Product Drawing.

3.3 Materials and Finish. The materials utilized in the construction of the contacts shall be as specified on the applicable AMP Product Drawing. Contacts shall be gold plated over a sub-plate of nickel to the thickness specified on the Product Drawing. Plating shall conform to Mil-G-45204 for gold and QQ-N-290 for nickel. Ferrules shall be silver plated in accordance with QQ-S-365 and may be color coded for identification purposes.

3.4 Functional Characteristics.

Maximum Current Rating	7.5 amperes
Contact Operating Temperature	-55°C to +85°C

3.5 Performance. Contacts shall be designed to meet the performance requirements specified herein. To verify compliance to this specification, representative samples shall be subjected to the tests specified in Table I.

3.5.1 Insulation Resistance. When tested as specified in Paragraph 4.6.2, resistance between adjacent inner contacts and between inner contacts and outer shell shall be at least 5000 megohms.

3.5.2 Dielectric Withstanding Voltage. When tested as specified in Paragraph 4.6.3, a contact assembly shall withstand a test potential of 1000 volts rms for a period of one minute between adjacent inner contacts and between inner contacts and outer shell.

3.5.3 Contact Retention. Contacts terminated to RG 108/U coaxial cable shall withstand a 50 pound tensile load when tested in accordance with Paragraph 4.6.4.

3.5.4 Durability. Upon completion of the test specified in Paragraph 4.6.5, the contacts shall meet the requirements for Low Level Conductivity, Paragraph 3.5.5, and Contact Resistance, Paragraph 3.5.6.

3.5.5 Low Level Conductivity. When tested as specified in Paragraph 4.6.6, the contacts shall conduct current at an open circuit voltage of 10 microvolts.

3.5.6 Contact Resistance. The contact resistance of mated inner contacts shall not exceed 2.0 milliohms when tested as specified in Paragraph 4.6.7.

3.5.7 Temperature Cycling. When tested at -55° and +85°C as specified in Paragraph 4.6.8, contacts shall show no evidence of physical damage.

3.5.8 Vibration. When tested as specified in Paragraph 4.6.9, the contacts shall show no evidence of physical damage, nor shall there be any interruption of continuity greater than 10 microseconds.

3.5.9 Shock. When tested as specified in Paragraph 4.6.10, the contacts shall show no evidence of physical damage, nor shall there be any interruption of continuity greater than 10 microseconds. Upon completion, the contacts shall meet the requirements of Insulation Resistance, Paragraph 3.5.1, Dielectric Withstanding Voltage, Paragraph 3.5.2, and Cable Retention, Paragraph 3.5.3.

4.0 QUALITY ASSURANCE PROVISIONS

4.1 General Provisions. The quality provisions specified herein shall be employed in the manufacturing and testing of this product to assure normal production units meet the performance requirements of this specification.

4.2 Classification of Test.

(A) Qualification Inspection (See 4.4)
(B) Quality Conformance Inspection (See 4.5)

4.3 Test Conditions.

4.3.1 Measurements. Measurements shall be taken with instruments that have been calibrated in accordance with specification Mil-C-45662.

4.3.2 Laboratory Conditions. Unless otherwise specified, normal laboratory temperature, humidity, and atmospheric pressure shall be considered acceptable for test purposes.

4.3.3 Coaxial Cable. Coaxial cable employed for test shall be in accordance with Mil-C-17.

4.4 Qualification Inspection.

4.4.1 Sample Selection. Contacts selected for test purpose shall be representative of current production. Preparation of test samples shall be conducted in accordance with AMP Instruction Sheets governing assembly and crimping technique. Contacts which will be subjected to vibration, shock and temperature cycling shall be attached to 12 inch lengths of cable so that they may be wired in series for monitoring throughout the tests, and shall be equipped with retention springs and inserted into their respective housings.

4.4.2 Test Procedure. Qualification Inspection shall be conducted in accordance with Table I in the sequence specified. Test Groups I and II shall consist of twenty-four contact assemblies.

TABLE I

Qualification Inspection Sequence		
Test or Examination	Test Group and Sequence	
	I	II
Examination of Product	1	1
Insulation Resistance	5	
Dielectric Withstanding Voltage	4	
Contact Resistance		5
Low Level Conductivity		4
Cable Retention	6	
Vibration	2	
Shock	3	
Temperature Cycling		2
Durability		3

4.5 Quality Conformance Inspection.

4.5.1 Sample Selection. Unless otherwise specified, sampling procedures shall be in accordance with Mil-Std-105. Sampling and Acceptable Quality Levels shall be as specified in the applicable AMP Quality Engineering Procedure. Dimensional requirements shall be in accordance with the applicable AMP Product Drawing.

4.5.2 Test Procedure. Connectors supplied in accordance with this specification shall meet the requirements for Examination of Product in accordance with the applicable AMP Quality Engineering Procedure.

4.6 Test Methods.

4.6.1 Examination of Product. Test samples shall be thoroughly examined to insure that they have been properly assembled in accordance with the manufacturer's instructions. They shall show no evidence of physical defects or being otherwise unfit for testing.

4.6.2 Insulation Resistance. Insulation resistance of Contact Assemblies shall be measured in accordance with Test Condition B, Method 302 of Mil-Std-202. The test voltage shall be applied separately between adjacent inner contacts and between the shell and inner contacts for two minutes before recording insulation resistance. Test samples shall meet the requirements specified in Paragraph 3.5.1.

4.6.3 Dielectric Withstanding Voltage. Contact assemblies shall be subjected to High Potential test per Method 301 of Mil-Std-202 with the test voltage applied separately between adjacent inner contacts and between the outer shell and the inner contacts. A 60 Hz test voltage shall be applied at 500 volts RMS per second, and held at the voltage specified in Paragraph 3.5.2 for one minute.

4.6.4 Cable Retention. The pin or socket shall be held firmly between the jaws of a tensile machine in a manner which will allow the outer shell and inner contacts to be pulled simultaneously. The braid and center conductors of the cable shall be joined together to create an equal pull throughout. All testing shall be performed with a head speed of one inch per minute.

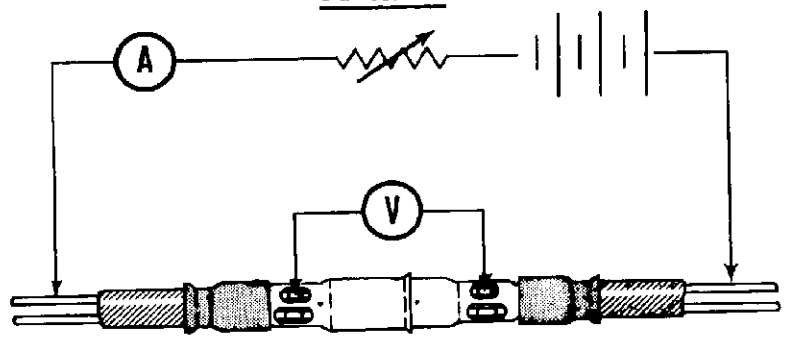
4.6.5 Durability. Connector assemblies shall be subjected to 200 engagements and withdrawals at a rate not exceeding 10 cycles per minute. After conditioning, the contacts shall meet the requirements specified in Paragraph 3.5.4.

4.6.6 Low Level Conductivity. Test shall be performed on both the inner contacts and the outer shell of individual contact pairs with the connector assembly mated. A direct current power supply adjusted to produce an open circuit voltage of 10 microvolts shall be applied to the contact pair, and an indication of current flow shall be observed. The polarity of the power supply shall be reversed and an indication of

current flow shall still be evident. Precaution shall be taken to insure that no voltage greater than 10 microvolts has been applied to the contacts prior to testing.

4.6.7 Contact Resistance. Tests shall be performed on individual contact pairs removed from the connector and mated. The voltage drop of the inner contacts shall be measured through the crimp port of the pin to the crimp port of the socket (See Figure I), and shall meet the requirements specified in Paragraph 3.5.6. A test current of one ampere D.C. shall be used to energize the contacts.

FIGURE I



4.6.8 Temperature Cycling. Connector assemblies shall be subjected to temperature cycling in accordance with Method 102, Test Condition D of Mil-Std-202. At the conclusion of the exposure, the contacts shall meet the requirements specified in Paragraph 3.5.7.

4.6.9 Vibration. Connector assemblies, prepared as described in Paragraph 4.4.1 and attached in their normal mounting method, shall be subjected to vibration in accordance with Method 201 of Mil-Std-202. The connector shall be vibrated for a period of two hours in each of the three mutually perpendicular planes. During the test, all contacts shall be wired in series and instrumentation shall be incorporated to detect electrical discontinuity as short as 10 microseconds. At the conclusion of the test, the contacts shall meet the requirements specified in Paragraph 3.5.8.

4.6.10 Shock. Connector assemblies prepared as described in Paragraph 4.4.1 and attached in their normal mounting method shall be subjected to a 50G deceleration in accordance with Method 213 Test Condition G of Mil-Std-202. The connector shall withstand eight shocks in each of the three mutually perpendicular axes. During the test, all contacts shall be wired in series and instrumentation shall be incorporated to detect electrical discontinuity as short as 10 microseconds. At the conclusion of the test, the contacts shall meet the requirements specified in Paragraph 3.5.9.